## Space Weather Forecast

Issued on Wednesday 6 November 2024 at 12:16 Local

**This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Moderate to High solar activity with further Moderate flares expected. Chance of Strong flares.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has been Moderate, with several moderate-class flares observed. There are ten active sunspot regions on the visible disc. The two most actively flaring regions on the disc, are located in the southeast. The remaining spots on the disc are comparatively smaller or less magnetically complex.

**Solar Wind / Geomagnetic Activity:** Solar winds were at Slightly Elevated levels throughout. The Interplanetary Magnetic Field was Moderate becoming Weak. The north-south component varied weakly, oscillating between positive and negative directions. Geomagnetic Activity was Quiet to Unsettled.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) fell to background levels through the period.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Moderate to High solar activity is forecast to continue with occasional Moderate flares expected and a chance of isolated Strong flares. These most likely from the large region in the northwest, or the two moderately sized regions in the southeast disc.

**Solar Wind / Geomagnetic Activity:** Connection to coronal hole fast winds is ongoing, albeit weakly, with a decline possible in coming hours. A further minor enhancement is possible late Day 2 (07 Nov) into Day 3 (08 Nov).

A Coronal Mass Ejection (CME) observed near the east limb in association with a Moderate-class flare from a sunspot region in the southeast. on 04 Nov. Although the bulk of the ejecta appears to pass behind Earth's orbit, a faint partial halo of material (mainly shock) appears to pass the Earth-Sun line. There is a chance of a glancing impact from this feature in the next few hours with low confidence.

Geomagnetic activity is expected to be at Quiet levels, potentially becoming Unsettled to Active with a slight chance of G1/Minor Storm intervals depending on any potential CME influence. On

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Day 2 and 3 (07-08 Nov) activity should be Quiet to Unsettled, with a chance of isolated Active intervals.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (High energy protons) is at background levels, with only a slight chance of enhancement above S1/Minor Storm levels.

## Geomagnetic Storms

| Geomagnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| **Minor or Moderate** | **G1 to G2** | No | 20 | 10 | 10 | 10 |
| **Strong** | **G3** | No | 1 | 1 | 1 | 1 |
| **Severe** | **G4** | No | 1 | 1 | 1 | 1 |
| **Extreme** | **G5** | No | 1 | 1 | 1 | 1 |

## Radio Blackouts - X-Ray Flares

| X-Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| **Active** | **R1-R2 (M Class)** | Yes | 80 | 80 | 80 | 80 |
| **Very Active** | **R3-R5 (X Class)** | No | 25 | 25 | 20 | 20 |

## Solar Radiation Storms (High Energy Protons)

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}sr^{-1}s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| **Active** | **≥ S1** | No | 15 | 15 | 15 | 15 |
| **Very Active** | **≥ S3 *** | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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